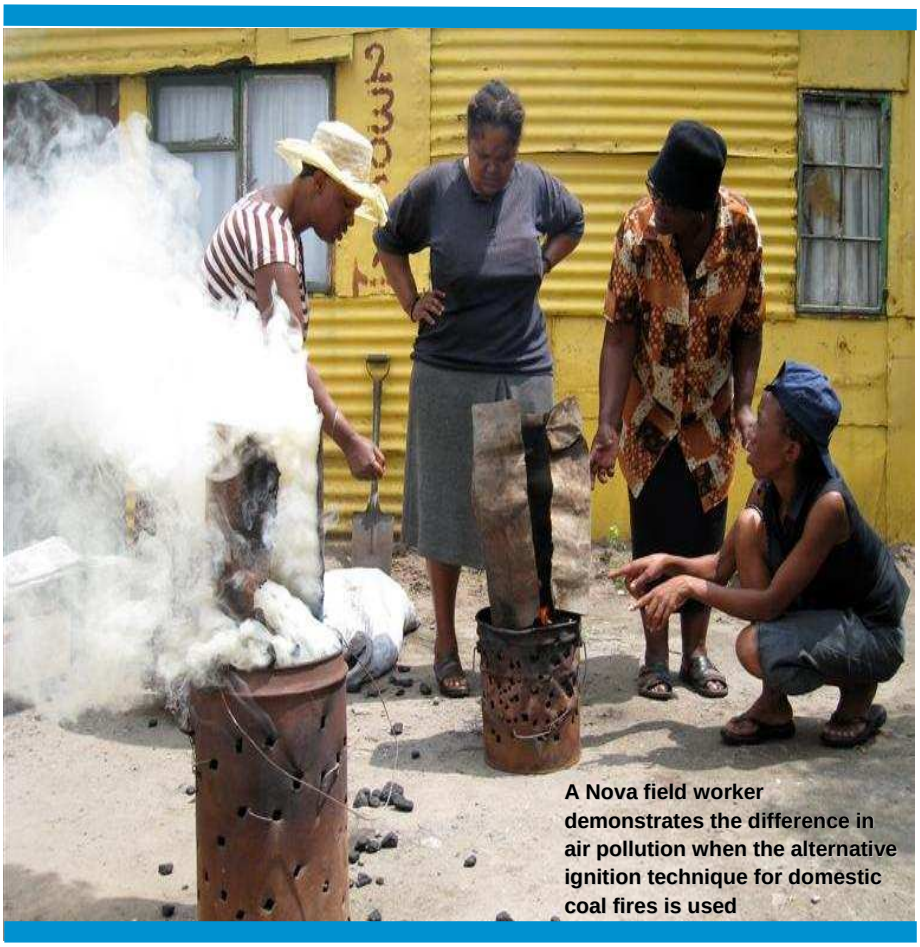
# Nova Highveld Air Quality Projcect



A Nova field worker demonstrates the difference in air pollution when the alternative ignition technique for domestic coal fires is used

# Domestic coal use, South Africa

## An energy efficiency project for coal using households in South Africa

The project is active in 11 municipalities in four South African provinces on the Highveld: Gauteng, Mpumalanga, Free State and KwaZulu-Natal.

The Highveld, at an altitude of 1,500 meter and higher, often experiences temperatures as low as zero degrees Celsius in winter. The area is rich in coal and water, with the result that huge mines, heavy industries and large power plants have been established here. They attract large numbers of people from rural areas and neighboring countries. Many dreams of finding a job and a steady income have never been realized, with the result that sprawling informal settlements are found around every town and city.

Numerous people stay in “shacks” or informal housing, made from plastic, cardboard and old sheets of corrugated iron. Government, providing subsidy houses, struggles to catch up with the high rate of influx of people.

Low-income families often use coal for domestic purposes, causing a serious health impact to young and old.

This project introduces an alternative ignition technique that leads to the efficient and clean burning of coal. This leads to a reduction of more than 80% in the emission of pollutants that are harmful to health, and a reduction of 30% – 50% in the quantity of coal that is used and, consequently, the same rate of reduction in the emission of greenhouse gasses.

## Project objectives:

The project has a positive impact on human and economic development and addresses three of the United Nations’ Millenium Development Goals: End Poverty and Hunger, Environmental Sustainability and Child Health.

- Reduction in domestic energy cost and an increase in expendable income per household
- Reduction in health risk due to exposure to air pollution
- Reduction in greenhouse gas emissions
- Reduction in solid waste
- Improvement in visibility

## About The Nova Institute

The project is owned and operated by the Nova Institute (www.nova.org.za), an independent, not for profit organisation that aims to improve the functioning of low-income households through participatory action research. Nova's vision is “A healthy household culture in Southern Africa”.

Nova was founded in 1994.

## Technical information

Emissions from coal burning have various negative health impacts. Coal burning emits large amounts of gaseous and particulate pollutants including sulphur dioxide, heavy metals, total and respirable particulates including heavy metals and inorganic ash, carbon monoxide, polycyclic aromatic hydrocarbons, and benzo(a)-pyrene. Polyaromatic hydrocarbons are recognised as carcinogens.

Researchers states that an economically active person in such an area can experience 69 affected days per year due to air pollution related illness, of which more than 60% can be attributed to domestic fuel use.

Together with community members, Nova developed an alternative ignition technique that reduces the health risk of the households who use the technique through increasing the efficiency of burning and thus reducing the particulates emitted as well as the mass of coal used. This reduces heavy metals, sulphur dioxide and ash emissions. Particle emissions, which is a leading cause of negative health impact associated with coal use, is reduced by more than 80%.

The project activity is the introduction of this alternative ignition technique to individual households.

Nova carries out the project activity by way of formal or informal training and demonstration of the alternative ignition technique.


## Features/Results:

The project is operational and has delivered VERs totaling 87 000 tCO2eq to date. Nova plans to extend the project to deliver an approximate total of 450 000 VERs between 2010 and 2019.

The benefits to households and to the state exceed the cost of the project by orders of magnitude. Households save between 30% and 50% of their annual coal use. This means a direct saving on coal purchases of about R675 per household per year. Other savings are difficult to determine. Direct saving in spending on medical care is most probably much more. It includes loss of income, travel to health care facilities as well as the use of private health care.

This project will enable low-income households to save more than R200 million over a period of ten years in coal purchases alone, and much more in health benefits. The production of more than 20 000 tons of ash, that contains polluting heavy metals, will be avoided.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